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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/640,703	08/18/2000	Je Hong Kim	2658-0203P	6489

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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/640,703

Applicant(s)

KIM, JE HONG

Examiner

Thoi V Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 ~~is/are~~ rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 4 is objected to because of the following informalities: in line 1 of the claim, "a diameter a cone" should be --a diameter of a cone--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 11, 12, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 2) in view of Yoshikawa et al. (USPN 5,775,791).

As shown in Fig. 2, Applicant's Prior Art discloses a back light unit in a liquid crystal display including a lamp 22 generating a light, and a light input 20 having a lamp housing 24 for housing the lamp and reflecting the light, said unit comprising:

a light-guide plate 4' including a prism-shaped pattern which would allow the light to be uniformly distributed out of the upper surface of the light-guide plate 4';

a light-path converter 14 placed above said light-guide plate to control a progress direction of the light in such a manner that the light outputted from the light-guide plate is progressed in a direction perpendicular to a liquid crystal panel (page 3, lines 1-27);
and

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a reflective plate placed below said light-guide plate; and

a diffusion sheet 12 disposed above said light-path converter for diffusing the light passing through the light path converter into the liquid crystal panel.

Applicant's Prior Art discloses a back light unit that is basically the same as that recited in claims 1-5, 11, 12, and 18-21 except that the light-guide plate does not include a cone pattern. As shown in Fig. 1, Yoshikawa discloses a back light unit in a liquid crystal display comprising a light-guide plate 1 including a cone pattern 31 to uniformly guide the light from a light source 4 (col. 1, lines 52-56),

wherein the cone pattern is formed on a lower surface of the light-guide plate;

wherein a vertical angle of a cone of the cone pattern ranges from about 90° to about 140° (see Fig. 5 and col. 4, lines 33-67);

wherein a diameter of a cone of the cone pattern ranges from about 0.05 to 0.2 mm (or 50 to 200 micrometers) and a height ranges from about 0.03 to 0.07 mm (or 30 to 70 micrometers) (see Fig. 4 and col. 3, lines 16-22);

wherein spacings of cones of the code pattern is controlled to correspond to a distribution of the light (see Fig. 2 and col. 3, lines 23-31);

wherein a density of said cones are such that said light exiting from said light-guide is uniformly distributed and said cones are more densely populated around partially dark areas of said light-guide (see Fig. 2 and col. 3, lines 23-31); and

wherein said density of cones increases as a distance from said lamp increases (see Fig. 2 and col. 3, lines 23-31).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the back light unit of Applicant's Prior Art with the teaching of Yoshikawa by employing a light-guide plate including a cone pattern having a density of cones increased as a distance from a light source increases to uniformly emit light of the light source.

Claims 6, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 2) in view of Yoshikawa et al. (USPN 5,775,791) as applied to claims 1-5, 11, 12, and 18-21 above and further in view of Ohara et al. (USPN 5,844,720).

The back light unit of as modified in view of Yoshikawa et al. above includes all that is recited in claims 6, 13, and 14 except that the light-path converter is not a forward prism sheet. As shown in Figs. 1 and 2, Ohara discloses a back light unit 50 for a liquid crystal display comprising a forward prism sheet disposed on top of a light-guide plate 6 and having a vertical angle ranging from 70° to 110° (col. 3, lines 27-48). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Applicant's Prior Art with the teaching of Ohara by employing a forward prism sheet having a proper vertical angle to improve the display brightness.

Claims 7, 8, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 2) in view of Yoshikawa et al. (USPN 5,775,791) as applied to claims 1-5, 11, 12, and 18-21 above and further in view of Yokoyama et al. (USPN 5,899,552).

As also shown in Fig. 2, Applicant's Prior Art further discloses that the light-path converter is a backward prism sheet having a vertical angle between 63° to 70° (page 3, lines 1-27). Accordingly, a desired between angle of the backward prism sheet is well within 45° . The back light device of Applicant's Prior Art Fig. 2 as modified in view of Yoshikawa above includes all that is recited in claims 7, 8, 13, 15 and 16 except that the vertical angle of the prism is not above about 100° . As shown in Fig. 19, Yokoyama discloses a back light unit BL comprising a backward prism 7 placed above a light-guide plate 61, wherein the prism has a vertical angle from 80° to 120° (col. 32, lines 51-55 and col. 35, lines 23-58). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Applicant's Prior Art with the teaching of Yokoyama by employing a backward prism as a light-path converter having a vertical angle of above about 100° so as to obtain a bright and uniform image for the display.

Claims 9, 10, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 2) in view of Yoshikawa et al. (USPN 5,775,791) as applied to claims 1-5, 11, 12, and 18-21 above and further in view of Yang (USPN 6,480,307 B1).

The back light of Applicant's Prior Art Fig. 2 as modified in view of Yoshikawa above includes all that is recited in claims 9, 10, 13 and 17 except that the light-path converter is not a hologram sheet having a pattern and a shape that are controlled to correspond to an output angle of light exiting from said light-guide. As shown in Figs. 33, 8A-8D and 9A-9B, Yang discloses a back light unit comprising a hologram sheet

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placed above a light-guide plate 52, wherein a space and a shape of the hologram pattern are controlled to correspond to an output angle of the light exiting from the light-guide (col. 7, lines 16-53). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the back light unit of Applicant's Prior Art with the teaching of Yang by forming a hologram sheet as a light-path converter having a pattern and a shape that are controlled to correspond to an output angle of light exiting from the light-guide plate so as to obtain a uniform light intensity distribution for the display.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



11/20/2002


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